Attachment B

Part 2

Rail Yard Emissions Inventory Methodology (ARB/Railroad Statewide Agreement)

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Rail Yard Emissions Inventory Methodology

California Air Resources Board

July 2006

Introduction

This document outlines the methodology to be used to develop an emission inventory of toxic air contaminants (TACs) from sources at rail yards or intermodal rail facilities (also referred to as rail yards). As stated in the ARB/Railroad Statewide Agreement (Agreement), *ARB, the local air districts and the Participating Railroads have worked collaboratively to start developing uniform statewide criteria and guidelines for the evaluation of toxic air contaminants from rail yards in California. Many factors may influence the risks from toxic air contaminants at a particular rail yard, including population density, rail yard activity, rail yard diesel engine population and meteorology, all of which make the extrapolation of findings from one rail yard to another difficult. The goal of this Program Element is to conduct evaluations at all Designated Rail Yards expeditiously in order to identify the risk from toxic air contaminants that these rail yards represent in relation to risks represented by other sources in the affected communities.*

TAC's listed in the most recent version of the Emission Inventory Criteria and Guidelines Report for the Air Toxics "Hot Spots" Program (AB2588) will be included in the inventory. For organic compounds, if ARB's SPECIATE database does not indicate the presence of a specific TAC for a specific source category as of June 1, 2006, that category will not be included in the inventory for that TAC.

The inventory includes emissions from locomotives, on-road trucks, off-road vehicles, container/cargo handling equipment, transportation refrigeration units, and portable equipment. An emission inventory for stationary equipment and other operations should be conducted pursuant to a local district's established protocols and accepted emission factors. Equipment and operations in this category include, but are not limited to, emergency standby engines, degreasers, painting operations, and fuel storage and dispensing. These guidelines are intended to ensure that rail yard emission inventories contain information on all sources of air emissions, use consistent emissions estimation approaches, and provide information needed to conduct air dispersion modeling.

Before developing the emission inventory, an initial hazard identification will be performed on each participating rail yard and its surrounding community. Such a hazard identification will consist of a listing of all potential TAC compounds potentially emitted from the facility operation. All TACs emitted from the yard should be listed. Approximate emission amounts should be estimated and reported to ARB. Each railroad will submit to ARB for review and approval a methodology to be used in assessing the relative importance of each of the listed substances. In addition, each railroad will propose, for review and approval by ARB, a methodology by which the risk from de minimus sources of TACs will be judged to be sufficiently low, compared to other TAC sources, such that more detailed inventory information on those sources, dispersion modeling, and risk assessment calculations are not required. The intent of this limitation is to emphasize the importance for the control of the major sources of TACs. The ARB staff will make the final decision as to whether specific sources of TACs at specific rail

yards may be excluded from more detailed analysis. In no case shall potential de minimus sources be excluded from the initial hazard identification process.

All data collected for the emission inventory will be quantified for the most current complete calendar year (2005) on an hourly basis, 365 days a year, taking into account temporal and spatial distribution of each emissions event or activity at the yard. The levels of temporal distributions can be defined as: annual, seasonal, diurnal (shift-based) and hourly operational schedules. Generally, annual average will be used unless the emission pattern is significantly non-uniform. In such cases, the next level of temporal distribution will be used until the non-uniformity is sufficiently addressed in the operational schedule. The significance of the deviation of seasonal, shift, and hourly patterns to the annual average should be analyzed for each type of emission. The data/information must be provided for each yard, and must include any emitting sources operated at the yard but not owned or leased by the participating railroad.

A detailed description of fuel type and fuel use for each emission source should be included in the final emission inventory report to California Air Resources Board (ARB) staff.

The following sections describe specific emissions inventory methodologies for each source category.

Locomotives

All the locomotives operated at the rail yard, such as locomotives owned or leased by the participating railroad, passing through locomotives, and passenger locomotives, should be included in this source category.

Locomotive emissions must be quantified separately for line haul and switcher locomotives. Emissions are based on number of locomotives, engine size, activity level (i.e., time spent in each power notch) and applicable emission factors. Alternative approaches, such as a fuel consumption-based calculation, may also be accepted upon approval of ARB staff.

Since locomotives operate in discrete throttle settings called notches, ranging from notch position one through eight, plus an idle position, emissions for each locomotive must be calculated based on the time spent in each notch as well as the corresponding emission factor for each notch.

Locomotive emission factors will be compiled corresponding to locomotive engine classes/groups, fuel types, applicable certification level, and throttle notch profiles. Sources for compiling locomotive emission factors include United States Environmental Protection Agency's (U.S. EPA) document "National Locomotive Emission Standard", ARB's study entitled "Fuel Effects on Locomotive Exhaust Emissions", Southwest Research Institute's testing results on locomotive engines, emissions data from engine manufactures, such as GE and EMD, previously accepted emission factors used in ARB's

Roseville Rail Yard Study, or any other source approved by ARB. Notch-specific emission factors for pre-Tier 0 locomotives operating on EPA non-road fuel will be taken from the compilation of emission factors presented in ARB's Roseville study. Table 1 contains the emission factors used in the Roseville Study by notch setting for 11 different locomotive model classifications compiled from all available emission data. Emission factors for Tier 0, Tier 1 and Tier 2 locomotives will be taken from EPA certification data or from other test results of in-use engines by an approved testing facility. Emission factors and duty cycles for unique or emission-controlled locomotives (e.g., "green goats", locomotives equipped with automatic start-stop systems) will be developed through EPA certification testing or ARB emission verification, or on a case-by-case basis, subject to review by ARB staff. Adjustments for the effects of fuel sulfur content on DPM emissions will be based on ARB methodologies.

Any locomotive activity, regardless of ownership, that occurs within the rail yard should be included in the emissions inventory. The emissions inventory includes certain emissions outside of the rail yard, such as emissions from locomotives that may travel along rail lines that are adjacent to the rail yard. This means that the emissions both from locomotives on main lines that pass through rail yards and from locomotives on main lines located adjacent to but outside of rail yards should be quantified.

In the inventory, interview-based or readily available actual data of duty cycle information will be used. Actual activity data is preferred in completing the emission inventories. However, use of an average operating mode (AOM) for an equipment category may be used in cases where it can be shown that equipment will be operating in a pattern that is predictable and repetitive, and no actual activity data is available.

Table 1. Selected Diesel PM Emission Factors for Locomotives

Model Number	Engine Type		Idle	Dynamic Brake*	Throttle Notches								DATA REFERENCES
					1	2	3	4	5	6	7	8	
Switchers (1)	EMD 12-645E	g/bhp/hr	2.07	0.80	0.32	0.33	0.31	0.24	0.23	0.28	0.25	0.28	EPA RSD APPENDIX B, 12/17/97
		hp	15	70	72	233	440	669	885	1109	1372	1586	
		g/hr	31	56	23	76	138	159	201	308	345	448	SWITCHERS
GP-60	EMD 16-710G3A	g/bhp/hr	3.18	4.09	0.25	0.31	0.30	0.23	0.21	0.25	0.21	0.23	EPA Locomotive Emissions Regulation
		hp	5.00	23.00	198.00	430.00	975.00	1351.00	1817.00	2637.00	3496.00	4035.00	RSD, Appendix B, 12/17/97
		g/hr	15.90	94.07	49.50	133.30	292.50	310.73	381.57	659.25	734.16	928.05	LINE HAUL LOCOMOTIVE
SD-70	EMD 16-710G3B	g/bhp/hr	1.67	2.41	0.26	0.23	0.24	0.20	0.19	0.21	0.24	0.25	EMISSIONS MEASUREMENTS -
Table 14, BN# 9457, avg Part #3 (SD70MAC)		hp	10.80	13.90	202.00	435.00	978.00	1514.00	2003.00	2876.00	3640.00	4187.00	LOCOMOTIVES BY STEVEN G. FRITZ
		g/hr	18.00	33.50	52.12	99.62	229.83	298.26	388.58	603.96	880.88	1030.00	FINAL REPORT AUGUST 1995
GP-40 (3)	EMD 16-645-E3	g/bhp/hr	2.82	1.16	0.34	0.34	0.33	0.25	0.23	0.28	0.24	0.26	EPA RSD APPENDIX B
		hp	17	69	105	395	686	1034	1461	1971	2661	3159	LINE-HAUL LOCOMOTIVE
		g/hr	47.94	80.04	35.7	134.3	226.38	258.5	336.03	551.88	638.64	821.34	EMD 16-645-E3
GP-50	EMD 16-645F3B	g/bhp/hr	2.89	1.78	0.25	0.30	0.30	0.23	0.21	0.24	0.21	0.24	EPA RSD APPENDIX B
		hp	9	36	205	475	1005	1353	1876	2766	3454	3866	LINE-HAUL LOCOMOTIVE
		g/hr	26.01	64.08	51.25	142.5	301.5	311.19	393.96	663.84	725.34	927.84	
GP-38 (4)	EMD 16-645E	g/bhp/hr	2.53	0.88	0.32	0.33	0.32	0.24	0.23	0.28	0.26	0.29	EPA RSD APPENDIX B
		hp	15	82	98	333	589	871	1161	1465	1810	2124	LINE-HAUL LOCOMOTIVE
		g/hr	38.00	72.00	31.00	110.00	186.00	212.00	267.00	417.00	463.00	608.00	
GE Dash 9	GE 7 FDL, 16 cylinde	g/bhp/hr											RECEIVED FROM GENERAL
		hp											ELECTRIC (Cert data)
		g/hr	45.872	47.641	59.3804	115.0184	232.4322	253.4752	430.6692	596.216	671.6898	643.2664	Tier 0 DASH 9 (BNSF 5419) & AC 4400
GE Dash 8	GE 7 FDL, 12 or 16 cylinder	g/bhp/hr	2.48	1.63	0.45	0.32	0.31	0.21	0.16	0.14	0.14	0.15	RECEIVED FROM GENERAL
		hp	14.9	90.5	191.2	416.2	940.2	1396	2048.4	2668	3352.9	4100.6	ELECTRIC (Cert data)
		g/hr	36.952	147.515	86.04	133.184	291.462	293.16	327.744	373.52	469.406	615.09	DASH 8 MFI TIER 0
GE Dash 7	GE 7 FDL, 12 cylinde	g/bhp/hr	9.12	5.32	0.67	0.67	0.35	0.45	0.24	0.18	0.18	0.18	EPA RSD APPENDIX B
		hp	25.00	117.00	150.00	300.00	700.00	1050.00	1550.00	2050.00	2600.00	3000.00	LINE-HAUL LOCOMOTIVE
		g/hr	228.00	622.44	100.50	201.00	245.00	472.50	372.00	369.00	468.00	540.00	
C60-A	GE HDL	g/bhp/hr											RECEIVED FROM GENERAL
		hp											ELECTRIC (Cert data)
		g/hr	67.8019	147.869	108.765	168.545	337.9375	305.4352	500.4864	604.6515	713.461	1063.981	TIER 0 AC6000 UP 7555
SD-90MACH	EMD 16V265H	g/bhp/hr											RECEIVED FROM GENERAL MOTORS
		hp											Emissions test data
		g/hr	61.05	108.50	50.10	99.06	255.85	423.70	561.60	329.28	258.15	933.60	EMD

Locomotives Groups
(1) Includes GP15-1, SW1500, MP15, MP15-AC
(2) Includes SD70, SD75, SD70M & SD70MAC
(3) Includes GP40, GP40-2, SD40-2, SD45-2, GP45, P42DC, F40PH
(4) Includes GP38-2, GP38-2L, GP39-2, GP39-2L, GP38-3L, SD38-2
(5) Includes C44-9, C44-9W, C44-AC, C44AC/60AC
(6) Includes B32-8, C39-8, B39-8, B40-8, C40-8, C41-8
(7) Includes B23-7, C30-7, C36-7, B30-7, B36-7, U36B

Sufficient verifiable data must be provided to validate the AOM of the equipment category and the use of the AOM must be approved by the ARB staff. Use of an AOM shall include only the necessary information to validate normal use of the equipment which shall include, but not be limited to, time in each engine load or notch, fuel type and amount utilized, time in idle mode, distance traveled in miles within the rail yard, hours of operation in rail yard, or any other information to show the predictable and repetitive nature of the equipment.

a) Line Haul and Passenger Locomotives

Data Needed:

1. number of line haul locomotives
2. size (hp), make, and model of locomotive
3. emission factor (EF) per locomotive per notch (g/hp-hr)
4. time-in-notch (hours) for each locomotive within rail yard boundary

Emissions Calculation:

$$EI_{Line\ haul} = \sum_{i=1}^{n} EF_{ij} * (Time\text{-}in\text{-}Notch)_{ij} * HP_i$$

Where:

$EI_{Line\ haul}$	=	Emissions inventory for all line haul locomotives
EF_{ij}	=	Emission factor per locomotive per notch (g/bhp-hr)
$Time\text{-}in\text{-}Notch_{ij}$	=	Time spent in each notch for each locomotive (hours)
HP_i	=	Horsepower of each locomotive (hp)

b) Switcher Locomotives

Data Needed:

1. size (hp), make, and model of locomotive
2. emission factor (EF) per locomotive per notch (g/hp-hr)
3. time-in-notch (hours) for each locomotive within rail yard boundary

Emissions Calculation:

$$EI_{Switchers} = \sum_{i=1}^{n} EF_{ij} * (\text{Time - in - Notch})_{ij} * HP_i$$

Where:

$EI_{Switchers}$	=	Emissions inventory for all switcher locomotives
EF_{ij}	=	Emission factor per locomotive per notch (g/bhp-hr)
$Time\text{-}in\text{-}Notch_{ij}$	=	Time spent in each notch for each locomotive (hours)
HP_i	=	Horsepower of each locomotive (hp)

c) Maintenance and Certification Testing of Locomotives (Line Haul or Switcher)

Data Needed:

1. size (hp), make, and model locomotive
2. emission factor (EF) per locomotive per notch (g/hp-hr)
3. Time-in-notch (hours) or operating test mode time interval for each locomotive within rail yard boundary

Emissions Calculation:

$$EI_{Maintenance} = \sum_{m=1}^{n} EF_m * (Time\text{-}in\text{-}notch)_m * HP_m$$

Where;

$EI_{Maintenance}$	=	Emissions inventory for all locomotives
EF_m	=	Emission factor per locomotive per notch (g/bhp-hr)

$Time\text{-}in\text{-}notch_m$ = Time spent in each notch or operating test mode time interval for each locomotive (hours)
HP_m = Horsepower per locomotive per notch (hp)

Cargo Handling Equipment

Cargo handling equipment (CHE) refers to all off-road mobile equipment used to move containers or bulk goods at rail yards such as yard tractors, forklifts, cranes, side and top picks, chassis stackers, loaders, and flippers. Emissions are based on number and type of equipment, activity levels (i.e., hours of operation), and applicable emission factor from an ARB approved source (e.g., U.S. EPA, manufacturer's certification data) for each equipment type. Alternative approaches, such as a fuel consumption-based calculation, may also be accepted upon approval of ARB staff.

Actual activity data is preferred in completing the emission inventories. However, use of an average operating mode (AOM) for an equipment category may be used in cases where it can be shown that equipment will be operating in a pattern that is predictable and repetitive, and no actual activity data is available.

Sufficient verifiable data must be provided to validate the AOM of the equipment category and the use of the AOM must be approved by the ARB staff. Use of an AOM shall include only the necessary information to validate normal use of the equipment which shall, include but not be limited to, engine load, fuel type and amount utilized, time in idle mode, distance traveled in miles within the rail yard, hours of operation in rail yard, or any other information to show the predictable and repetitive nature of the equipment.

Data Needed:

1. population of cargo handling equipment
2. emission factor (EF) by size and model year (g/bhp-hr)
3. size (hp)
4. load factor (LF)
5. activity within rail yard boundary (hours)

Emission Calculation:

$$EI_{CHE} = \sum_{i=1}^{n} EF_i * HRS_i * HP_i * LF_i$$

Where:

EI_{CHE} = Emissions inventory for all cargo handling equipment
EF_i = Emission factor for each CHE by type, size, and model year (g/bhp-hr)
HRS_i = Operating hours within rail yard boundary (hours)
HP_i = Horsepower of each equipment (hp)
LF_i = Load factor

On-Road Trucks

The emissions from on-road trucks, either dedicated or transient visitors (e.g., delivering containers) are based on number of trucks, activity levels (i.e., average vehicle miles to designated areas traveled within rail yard boundary, idling hours), and applicable emission factors from ARB's most recently approved EMFAC model, or approved for use by ARB. An overall fleet average for each class of on-road trucks (i.e., heavy-heavy-duty on-road trucks, heavy-duty on-road trucks) can be used to estimate emissions. The emissions from idling and traveling modes should be separated because different source treatments (point or volume sources) will be used in air dispersion modeling.

Actual activity data is preferred in completing the emission inventories. However, use of an average operating mode (AOM) for an equipment category may be used in cases where it can be shown that equipment will be operating in a pattern that is predictable and repetitive, and no actual activity data is available.

Sufficient verifiable data must be provided to validate the AOM of the equipment category and the use of the AOM must be approved by the ARB staff. Use of an AOM shall include only the necessary information to validate normal use of the equipment which shall, include but not be limited to, time in each engine load or notch, fuel type and amount utilized, time in idle mode, distance traveled in miles and hours of operation within the rail yard, or any other information to show the predictable and repetitive nature of the equipment.

Data Needed:

1. for each class of truck, the number of trucks
2. fleet average EMFAC emission factor (EF_{VMT}) for average speed within rail yard (g/mile) – for dedicated on-road trucks, use model year specific EMFAC emission factor
3. fleet average EMFAC emission factor (EF_{idling}) for idling (g/hour) – for dedicated on-road trucks, use model year specific EMFAC emission factor
4. average of miles to designated areas traveled within rail yard boundary (VMT) for each truck
5. time spent idling within rail yard boundary (hours)

Emission Calculation:

$$EI_{Trucks} = \sum_{i=1}^{n} (EF_{VMT})_i * VMT_i + (EF_{idling})_i * HRS_i$$

Where:

EI_{Trucks} = Emissions inventory for all trucks

EF_{VMT} = fleet average (model year specific for dedicated on-road trucks) EMFAC emission factor for average speed within rail yard (g/mile)

EF_{Idling}	=	fleet average (model year specific for dedicated on-road trucks) EMFAC emission factor for idling (g/hour)
VMT_i	=	number of average miles to designated areas traveled in each truck within rail yard boundary
HRS_i	=	idling hours for each truck (hours)

Other On-Road Vehicles (e.g., Light Duty Service Trucks)

Other on-road trucks to be considered include either dedicated or transient trucks to the yard. "Dedicated" is defined as trucks with activities that are wholly contained within the rail yard. "Transient" are those trucks that access the rail yard for pick up and delivery from outside the rail yard. Emissions from this source type are based on number of trucks, activity levels (vehicle miles traveled within the rail yard boundary, idling time), and applicable EFs from ARB's most recent EMFAC model. Alternative approaches, such as a fuel consumption based calculation, may also be accepted upon approval of ARB staff. An overall fleet average for each class of on-road vehicles (i.e., light-duty trucks, medium-duty trucks) can be used to estimate emissions. The emissions from idling and traveling modes should be separated because different source treatments (point or volume sources) will be used in air dispersion modeling.

Employees and contractors' personal trucks and cars are excluded from this category. Emissions from delivery trucks, such as UPS and Federal Express trucks, are not included in the inventories, unless the rail yard hosts a package handling facility for the delivery service. Emissions from delivery vehicles that are directly associated with rail operations, such as fuel and sand delivery trucks, will be included in the inventories.

Actual activity data is preferred in completing the emission inventories. However, use of an average operating mode (AOM) for an equipment category may be used in cases where it can be shown that equipment will be operating in a pattern that is predictable and repetitive, and no actual activity data is available.

Sufficient verifiable data must be provided to validate the AOM of the equipment category and the use of the AOM must be approved by the ARB staff. Use of an AOM shall include only the necessary information to validate normal use of the equipment which shall, include but not be limited to, engine load, fuel type and amount utilized, time in idle mode, distance traveled in miles within the rail yard, hours of operation in rail yard, or any other information to show the predictable and repetitive nature of the equipment.

Data Needed:

1. for each on-road vehicle class, the number of on-road vehicles
2. fleet average EMFAC emission factor (EF) (g/mile) – for dedicated on-road trucks, use model year specific EMFAC emission factor
3. miles traveled within rail yard boundary (VMT) for each vehicle

Emission Calculation:

$$EI_{Onroad} = \sum_{i=1}^{n} EF_i * VMT_i$$

Where:

EI_{Onroad} = Emissions inventory for other on-road vehicles
EF_i = fleet average (model year specific for dedicated on-road trucks) EMFAC emission factor (g/mile)
VMT_i = number of miles traveled within rail yard boundary

Other Off-Road Equipment

The emissions from other off-road equipment such as transport refrigeration units (TRU) are based on activity level (i.e., number of equipment, activity levels (i.e., hours of operation), and applicable emission factor from an ARB approved source (e.g., U.S. EPA, manufacturer's certification data) for each equipment type. Alternative approaches, such as a fuel consumption based calculation, may also be accepted upon approval of ARB staff. The ARB Portable Equipment Regulatory Program (PERP) can provide emission factor and activity data for most portable equipment operated within the state.

Actual activity data is preferred in completing the emission inventories. However, use of an average operating mode (AOM) for an equipment category may be used in cases where it can be shown that equipment will be operating in a pattern that is predictable and repetitive, and no actual activity data is available.

Sufficient verifiable data must be provided to validate the AOM of the equipment category and the use of the AOM must be approved by the ARB staff. Use of an AOM shall include only the necessary information to validate normal use of the equipment which shall, include but not be limited to, engine load, fuel type and amount utilized, time in idle mode, distance traveled in miles within the rail yard, hours of operation in rail yard, or any other information to show the predictable and repetitive nature of the equipment.

Data Needed:

1. population of off-road equipment (non-cargo handling equipment)
2. baseline emission factor (EF) by size and model year (g/bhp-hr)
3. size (hp)
4. load factor (LF)
5. activity within rail yard boundary (hours)

Emission Calculation:

$$EI_{offroad} = \sum_{i=1}^{n} EF_i * HRS_i * HP_i * LF_i$$

Where:

$EI_{offroad}$	=	Emissions inventory for all other equipment
EF_i	=	Emission factor by type, size, and model year (g/bhp-hr)
HRS_i	=	Operating hours within rail yard boundary (hours)
HP_i	=	Horsepower of each equipment (hp)
LF_i	=	Load factor

Stationary Point and Area Sources

Stationary point and area sources include, but are not limited to, fuel storage and dispensing equipment, emergency standby engines, degreasers, solvents, and painting operation areas. Generally, an emission inventory for stationary point and area sources should be conducted pursuant to a local district's protocols and accepted emission factors. An alternative calculation methodology can be found in this section.

Emissions from a stationary source are based on fuel or product usage, and emissions should be calculated using an approved ARB or local district's emission factor that is most applicable to the equipment or activity. For certain area sources, such as solvents and painting areas, it is appropriate to calculate emissions based on activity levels i.e., hours of operation and/or quantity used.

Stationary point and area sources that are exempt from regulations by the host air district will be identified, but will not be included in the emission inventory calculations or the modeling analysis.

Actual activity data is preferred in completing the emission inventories. However, use of an average operating mode (AOM) for an equipment category may be used in cases where it can be shown that equipment will be operating in a pattern that is predictable and repetitive, and no actual activity data is available.

Sufficient verifiable data must be provided to validate the AOM of the equipment category and the use of the AOM must be approved by the ARB staff. Use of an AOM shall include only the necessary information to validate normal use of the equipment which shall, include but not be limited to, engine load, fuel type and amount utilized, time in idle mode, distance traveled in miles within the rail yard, hours of operation in rail yard, or any other information to show the predictable and repetitive nature of the equipment.

Data Needed:

1. population of stationary sources
2. appropriate EF for stationary sources (g/kg or g/lb)
3. fuel or product usage of each source (kg/hr or lb/hr)

Emission Calculation:

$$EI_{stationary} = \sum_{i=1}^{n} EF_i * FU_i$$

Where:

$EI_{stationary}$	=	Emissions inventory for stationary sources
EF_i	=	Emission factor by type (g/kg or g/lb)
FU_i	=	Fuel usage (kg/hr or lb/hr)

Total Emissions from Rail Yards

The total emissions from rail yards are calculated by summing the individual totals for each source category as follows:

$$EI_{Total} = EI_{Linehaul} + EI_{Switcher} + EI_{Maintenance} + EI_{CHE} + EI_{Trucks} + EI_{Onroad} + EI_{Offroad} + EI_{Stationary}$$

Recordkeeping Requirement

The rail yard operator must maintain records of all items described above under Data Needed for each locomotive, CHE, on-road truck, other on-road vehicle, off-road equipment, or stationary sources. The information must be recorded in a format approved by ARB and be maintained for a minimum of two years. The source for all emission factors and information used to determine emission factors shall be referenced and documented.

The emissions inventory for each source category shall be determined in accordance with these guidelines and provided in a format that is reproducible by ARB staff.